

Application No. 10/024,746
Amendment dated May 14, 2004
Reply to Office Action of April 9, 2004

REMARKS

The Office Action mailed April 9, 2004 has been carefully considered by applicant. Applicant thanks the Examiner for discussing the issues below during an Examiner interview on May 14, 2004 and agreeing to further consider the outstanding issues, as discussed below.

Formal Matters

The drawings have been objected to as failing to depict a "U-shaped supporting frame", as the supporting frame shown in Fig. 1 is closed by the area shaped cross stay (1"). By the present amendment, the claims have been amended to recite "a supporting frame comprising a U-shaped portion comprising a hinge support forming U-limb, a lock supporting form the other U-limb, and a door bottom that interconnects the hinge support and lock support." With these amendments, the supporting frame is believed to be properly recited in view of Fig. 1. No changes to the drawings are believed necessary. Withdrawal of the objection to the drawings is respectfully requested.

Claims 38 and 39 have been objected to as being substantively duplicative. By the present amendment, claim 39 is cancelled.

Claim 60 has been objected to because it improperly depended from cancelled claim 1. Claim 60 has been amended to properly depend from claim 32.

Claim Rejections under 35 USC §112

Claims 33-35, 40, 42, 56 and 63-65 have been rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. By the present amendment, applicant has amended the claims to more particularly point out the subject matter of the present invention and render same allowable over the applied references.

Claim 33 has been amended to more particularly define the "alloy part" as comprising a sheet of aluminum. Claim 34 has been amended to recite that the sheet of aluminum has a thickness of "approximately 1.2 millimeters to approximately 1.8 millimeters". Claim 38 has been amended to positively claim the area shaped cross stay

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and remove the reference to the "basic U-shape". Claim 56 has been amended to depend from claim 53, and as such provides proper antecedent basis for "the frame reinforcement part (11d)". Claim 63 has been amended to positively recite a "lock support".

Claim Rejections under 35 USC §103(a)

Claims 32, 33, 36-40, 45-47, 51, 52, 57, 59, 60 and 66 have been rejected under 35 USC §103(a) as being unpatentable of Widrig et al U.S. Patent No. 4,876,825 in view of German Patent Publication No. 196 16 788. Claims 34 and 35 have been rejected under 35 USC §103(a) as being unpatentable over Widrig et al '825 in view of German Patent Publication No. 196 16 788. Claims 41, 42-44, 48-50, 53-56, 58, 61 and 62 have been rejected under 35 USC §103(a) as being unpatentable over Widrig et al '825 in view of German Patent Publication No. 196 16 788, and further in view of Cho U.S. Patent No. 6,367,863. Claims 63-65 have been rejected under 35 USC §103(a) as being unpatentable over Widrig et al '825 in view of German Patent Publication No. 196 16 788 and Cho '863. Claim 67 is rejected under 35 USC §103(a) as being unpatentable over Widrig et al '825 in view of German Patent Publication No. 196 16 788 and Rashid et al U.S. Patent No. 5,536,060.

In the Office Action, the Examiner states that the applicant's arguments concerning how the components of the vehicle door are made are not persuasive since the claims are product-by-process claims.

Applicant respectfully disagrees with the Examiner's conclusion that the claims at issue are product-by-process claims.

MPEP §2113 states that:

The structure implied by the process steps should be considered when assessing the patentability of product by process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics of the final product. See, e.g., *In re Garnero*, 412 F. 2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as 'welded', 'intermixed', 'ground in place', 'press fitted', and 'etched' are capable of construction as structural limitations).

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Independent claims 32, 63, 66 and 67 positively recite the supporting frame as comprising a one piece light metal or light metal alloy part selected from the group consisting of a pressed part and a deep drawn part. By this language, applicant does not intend to set forth product-by-process limitations. Rather, the claim elements "pressed part" and "deep drawn part" set forth distinctive structural characteristics of the claimed product. In addition, the "pressed" or "deep drawn" nature of the supporting frame of the present invention can only be defined by the type of manufacturing process by which it is made. Thus, according to the MPEP, the structure implied by the elements "pressed part" and "deep drawn part" should be considered when assessing the patentability of the claims. §2113.

The Widrig et al '825 reference teaches a supporting frame (11, 12, 13) that may be made in one piece and formed of aluminum alloy materials. However, for this arrangement, Widrig et al '825 requires that the supporting frame be produced from casting and that the strut (14) is cast into the casting during the time when the latter is produced. Col. 2, lines 33-38.

Casting

Casting is the solidification of liquid metal into a solid shape. Liquid metal is poured into a mold cavity, where it transforms, or solidifies into a solid of the desired shape. Parts that are cast will inherently have internal and surface defects. Non-metallic particles, or inclusions, can be created by oxidation of the liquid metal, or particles entrained from slag, dirt, or refractories when the metal is fed into the mold. Inclusions can initiate cracks when a part is in service. In addition, shrinkage cavities are often created by volumetric shrinkage of the metal during solidification. This type of defect is especially dangerous when the cavities are hidden internally. Gas porosity may also occur when gas bubbles evolved during the solidification become trapped to form small round voids inside the casting. If these voids reach the metal surface and are exposed to the environment, they will oxidize and become permanent. The solidification process also often produces different compositions in different parts of the casting -- this is called segregation. In addition, residual stress and cracks are often

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generated in a casting as a result of thermal contraction, or strain, that accompanies cooling of metal in the solid state.

Many of the inherent defects discussed above are difficult to detect and often impossible to correct during subsequent processing and can adversely effect the structural strength and other properties of the cast part. If strength and toughness are critical, then cast parts often must be subjected to further processing to improve their properties. This can increase the cost and labor involved in creating the door frame.

Deep Drawing or Pressing

In contrast to the teachings of the prior art, the present application claims a one piece supporting frame that is either a pressed part or a deep drawn part. Deep drawn and pressed parts are the result of a mechanical deformation process, whereby a sheet of metal is compressed and bent to form the desired part. Both deep drawn parts and pressed parts will inherently be stronger and overcome many of the defects created during casting, as defined above. During the deep drawing and pressing processes, undesirable internal microstructures are broken down and internal cracks welded together by the deformation process. Deep drawn and pressed parts are processed such that the grains of the metal part are elongated in the working direction. Therefore the deep drawing and pressing processes greatly increase the strength and toughness of the part, particularly in the direction of elongation, due to strain hardening.

Conclusion

The vehicle door of the present invention, which is comprises a one piece light metal or light metal alloy supporting frame that is either a pressed part or a deep drawn part is taught no where in the prior art. The Widrig et al '825 reference in fact teaches directly against such a concept by explicitly requiring that if a vehicle door is created in one piece, it be a cast part. The remaining references cited by the Examiner also fail to teach or suggest a one piece light metal or light metal alloy supporting frame that is either a pressed part or a deep drawn part.

As discussed above, providing a one piece light metal or light metal alloy supporting frame that is either a pressed part or a deep drawn part provides substantial structural improvement over the vehicle doors taught by the prior art. The invention

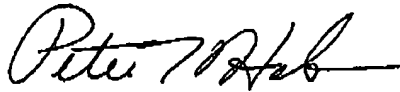
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also lessens the cost of manufacture by eliminating later refining processes required during the casting process. As such, the present invention is a substantial improvement over the prior art and is not obvious in light thereof.

The present application is thus believed in condition for allowance with claims 32-38 and 40-67, and such action is respectfully requested.

Respectfully submitted,

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